

Groenland Water User Association

Historical Overview

Palmiet River

Water plays an important role in our lives and we must ensure that we manage our water resources in such a manner to ensure the sustainability of these resources. Rivers are an important water source and are also ecosystems that help maintain our environments' natural balance.

The catchment area of the Palmiet River is situated in an area which has a Mediterranean-type climate and is characterised by hot dry summers and cold wet winters. The rainfall pattern in the Palmiet basin is orographic in nature (the mountains having an effect on the rainfall). The highest rainfall in the catchment (up to 2 500 mm/annum) occurs on the Hottentots Holland mountains, where the Palmiet River rises in the Landroskop at an altitude of 1 010 m above mean sea level. The Palmiet River basin comprises approximately 500 km². Flow is generally very seasonal and the catchment area generates a mean annual runoff of approximately 219 million m³.

The upper and middle sections of the catchment are farmed extensively (mainly deciduous fruit) and used for plantation forestry. Where it flows through the town of Grabouw and the agricultural areas, the river has been altered quite dramatically from its natural state. In its lower reaches, the Palmiet River flows through the Kogelberg State Forest, now the core of the country's first Biosphere Reserve and which comprises approximately 300 km² of the total 500 km² catchment area. The result is a river that starts in pristine condition in the mountains, becomes severely degraded in its middle reaches and ends with an acceptable quality of water due to the inflow of clean water from its tributaries in the Kogelberg Biosphere Reserve.

The mainstream is 74 km long and discharges into the Atlantic Ocean via a small estuary near Kleinmond. The 11 major tributaries to the Palmiet River are listed below, with an indication of the location in relation to the Palmiet River and the length from source to confluence:

- Keerom River (west; 7,2km);
- Wesselsgat River (west; 11,2 km);
- Klipdrif River (west; 9,5 km);
- Klein Dwars River (west; 2,3 km);
- Berg River (west; 5,9 km);
- Klein Palmiet River (west; 8,6 km);
- Huis River (east; 4,9 km);
- Kromme River (east; 21,1 km);
- Dwars River (west; 9,4 km);
- Louws River (west; 5,8 km); and
- Oubos River (west; 2,7 km).

There are 6 instream dams on the mainstream of the Palmiet River, listed with their storage capacity and year of construction:

- Nuweberg (3,9 million m³; 1971);
- Eikenhof (29 million m³; 1977);
- Peninsula (1,1 million m³; 1947);
- Applethwaite (2,9 million m³; 1952);
- Kogelberg (19,3 million m³; 1987); and
- Arieskraal (5,9 million m³; 1967).

Groenland Irrigation Board (GIB)

Apart from the private dam syndicates and individual riparian owners pumping water from the Palmiet River, the first two joint projects utilising river water were known as the *Palmiet River Scheme* (with 5 members) and the *Groenland Winter Water Pumping Scheme* (with 18 members). These two separate schemes shared the same hippo pool in the Palmiet River at Elgin Orchards. As fruit farming developed in the valley it became clear that the existing water resources were inadequate to sustain future development.

In 1966 farmers established a Steering Committee under the previous Water Act of 1956, to undertake a major irrigation project which would supply the district with summer irrigation water. The late Mr. Tim Pare was elected first chairman of this committee and served as chairperson from 9 March 1966 to 18 June 1974.

During the time when the late Mr. Leo Fine served as second chairperson (from 18 June 1974 to 9 October 1995), the committee started the process of establishing an Irrigation Board, as well as requested the Department of Water Affairs to build a Government Water Scheme in the Palmiet River. The Minister replied that, due to prior commitments, such a scheme could not be undertaken for at least the next 5 years and advised the committee to build a dam at own expense and then apply for a loan and subsidy for the reticulation scheme, as this could be accommodated in the annual Water Affairs budget. This prompted them to proceed with the appointment of Ninham Shand as consulting engineers and the construction of the Eikenhof Dam, which was completed in 1977. Certain powers regarding the supply of water to its members were then assigned by the Minister to the Groenland Irrigation Board by virtue of Government Notice No. 991, dated 15 December 1978.

Offices and Staff

At the inception of the Groenland Irrigation Scheme, the Board rented office space at the Elgin Co-Operative Fruit Growers for many years. During July 1989 the Board bought the property known as portion 55 of the farm Krom River 317 on the Viljoenshoop Road. It was an old building known as the Beaulieu store, and was in a very dilapidated state at the time. Nelia Botha was appointed as architect to design and oversee the large-scale alterations required to the building and site. Building operations were completed by March 1991 and the GIB relocated to the premises at the beginning of April 1991.

Although it is now the official offices of the Groenland Water User Association, the property still belongs to the GIB.

The following secretaries were employed by the Board on a part time basis:

- Mrs. E. Aspinall – from 1 November 1970 to 30 April 1980;
- Mrs. V. Swart – from 1 May 1980 to 28 February 1982;
- Mrs. S. Joubert – from 1 March 1982 to 30 November 1982; and
- Mrs. M. Ellmann – from 1 November 1982 to 31 August 1999.

The following Water Bailiffs were employed by the Board:

- Mr. G. Scott – from 1 June 1975 to 31 August 1995;
- Mr. W. Wilkinson – from 1 January 1979 to 31 March 2006; and
- Mr. M. van der Merwe – from 1 August 1995 to 31 January 2001.

In a contractual agreement reached with the Groenland Water User Association in February 2008, the staff complement of the GIB was transferred to the GWUA on 1 March 2008. They are:

- Danie Bosch - CEO since 1 July 1999;
- Theo Lötter - Bailiff since 1 November 2005;
- Albert Pontac - Craftsman since 1 October 2006;
- John Petersen - Labourer since 1 February 1991; and
- Charles Louw - Labourer since 1 July 1994.

The agreement states that the staff will still fulfil the duties required by the GIB, but that this will be done on a time and cost basis.

Eikenhof Dam

The Eikenhof Dam is located in the upper catchment of the Palmiet River, 2 km from Grabouw, and is situated on the confluence of the Wesselsgat-, Keeroms- and Palmiet Rivers. The catchment that directly feeds the Eikenhof Dam covers about 61 km² and generates a virgin mean annual run-off of approximately 45 million m³.

When completed in 1977, the dam had a total storage capacity of 22 million m³. In 1988 the dam was enlarged to 25 million m³ capacity, at which time the auxiliary spillway was also added. In 1998 the capacity of the dam was once again increased to its present 29 million m³. This was accomplished by demolishing the 1m-high service spillway sill and the 2m-high auxiliary spillway sill and replacing them with a 3m-high reinforced concrete labyrinth on the service spillway and ten reinforced concrete straight-crested Hydroplus vertical fusegates (4,5 m wide and 1,8 m high) on the auxiliary spillway.

The service spillway crest level and Full Supply Level of Eikenhof Dam is measured at 317,0 m above mean sea level and covers an area of 270 ha at Full Supply Level. The dam's zoned earthfill embankment is 450 m long and 47 m high.

Due to its large size and high hazard, the dam is classified as a Category III dam. The first Safety Inspection Report on the dam was completed in January 1995 and accepted by the Department of Water Affairs and Forestry's (DWAF) Dam Safety Office. During September 1996 DWAF issued a 9B Permit, placing certain conditions on the requested increase in capacity. The Hydroplus Design Report dated August 1998 was therefore completed and accepted by DWAF. The second Dam Safety Inspection Report was completed in October 2003 and accepted by DWAF's Dam Safety Office. The Emergency Plan for Eikenhof Dam is updated annually.

Eikenhof Dam is owned, operated and maintained by the Groenland Irrigation Board. At present the scheme supplies irrigation water to some 6 400 ha of agricultural land on which predominantly deciduous fruit is cultivated, as well as domestic water to Theewaterskloof municipality (Grabouw village) and local industries such as Appletiser, Two-A-Day, etc.

Water Use Entitlements

Water use entitlements are based on 6 000 m³/ha/year for the area. The total yield from the Eikenhof Dam is 38,38 million m³/year, and is registered as follows:

- Agriculture: 21,71 million m³ (summer allocation) and 10,75 million m³ (winter allocation);
- Industrial: 0,85 million m³ (summer allocation) and 0,65 million m³ (winter allocation); and
- Domestic: 2,72 million m³ (summer allocation) and 1,70 million m³ (winter allocation).

The water reticulation system consists of approximately 90 km underground pipes ranging from the nominal 150mm diameter to 900mm dia. Due to the topography of the valley, water is pumped into several zones and delivered to the boundary of each property.

In addition to the above water use entitlements, the dam releases 0,78 million m³ in summer periods to comply with the ecological flow requirements of the river.

Although not a direct water user in the Groenland Water User Association's area of jurisdiction, the town of Kleinmond (Overstrand Municipality) is allocated 2,25 million m³ water per year from the estuary of the Palmiet River.

Palmiet Inter-basin Transfer Scheme

Phase 1 of the Palmiet Inter-basin Transfer Scheme, which came into operation in September 1998, transfers approximately 27 million m³ water per annum from the Palmiet River to the Berg Water Management Area for use by the City of Cape Town – when this amount is available for abstraction. The inter-basin transfer takes place via Eskom's hydro-electrical Palmiet Pumped Storage Scheme, which pumps additional water from Kogelberg Dam into Rockview Dam, from where it gravitates to the Upper Steenbras Dam.

When the Minister of Water Affairs and Forestry approved Phase 1 of the Palmiet Inter-basin Transfer Scheme in February 1995, it was on the condition that a catchment management plan had to be developed and that the ecological flow requirements of the river and estuary had to be determined and monitored. This meant that the Reserve component of the Palmiet River had to be determined, which comprises the Instream Flow Requirements (IFR) at various sections in the river and in the estuary, and the amount of water required to meet the basic needs in the catchment.

In July 1996 a sectorally-representative Steering Committee was elected to guide the development of the Catchment Management Plan. This committee, elected by means of a public process, was dissolved with the establishment of the Groenland Water User Association and its management committee.

Groenland Water User Association (GWUA)

The Minister of Water Affairs and Forestry approved the establishment of the Groenland Water User Association in the Government Gazette No. 27641, dated 10 June 2005. The former Groenland Irrigation Board, with Mr. Ryk Joubert who served as 3rd chairperson from 9 October 1995 to 9 September 2005, was transformed into the Groenland WUA in terms of the requirements of Section 98(4) of the National Water Act, No. 36 of 1998.

The Management Committee of the Groenland Water User Association consists of 20 committee members, and one co-opted member, represented as follow:

- nine elected members - representing the registered water users in the area;
- two nominated members - representing the small farmer sector;
- two nominated members - representing the individual water users / farm workers;
- two nominated members - representing national and local industry;
- three nominated members - representing local government;
- one nominated member - representing public environmental organizations;
- one nominated member - representing recreational users; and
- one co-opted member - representing forestry.

The first election of the GWUA management committee took place on 9 September 2005.

Dr. Neil Fairall was elected as the first chairperson of the Groenland WUA (15 November 2005 to 6 February 2007). Mr. Derek Moore currently serves as the second chairperson, since 8 May 2007.

The area of operation of the Groenland Water User Association is situated in the Breede Water Management Area, No. 18 in the Western Cape Province. The water resources under control of Groenland Water User Association fall within the catchment area of the Palmiet River, and includes all its tributaries from where it originates in the Hottentots Holland mountains (north/north-west), the Kogelberg mountains (west/south-west) and the Groenland mountains (east up to the confluence with the Krom River and Palmiet River). The area of operation of Groenland Water User Association includes all properties where any person has a water use entitlement within the one Sub- district (Groenland Irrigation Board) and four Sub-areas according to Section 22(1) of the Act. Although the Eskom Pumped Storage Scheme is within the GWUA's area of operation, it is excluded and managed by DWAF.

Highlights of the strategic plan for Groenland Water User Association, as contained in its Business Plan that was submitted to the Minister of Water Affairs and Forestry during March 2008, include:

- The *mission* is to ensure that the water resources within its area of jurisdiction are protected, used, developed, conserved, managed and controlled;
- The *vision* is to establish sound and efficient management of water resources, benefiting all stakeholders; and
- The *overall objective* is to ensure equitable allocation of water to all members who have a water use entitlement.

Challenges

In conclusion, the following challenges must be addressed by the GWUA in order to achieve its objectives:

Financial:

- Verifying the registration of all water use entitlements;
- Becoming an implementing and billing agent in order to retain a portion of the water use charges on behalf of DWAF, as well as a portion of the water resource management charges for implementing certain functions on behalf of DWAF;
- Managing the risk of default in payments of water users; and
- Monitoring the cost of pollution.

Environmental:

- Implementation of the management plan for the Palmiet River;
- Monitoring the risk of e-coli pollution due to sewerage spills from Wastewater Treatment Works, as well as seepage from French drains on farms;
- Lowering the risk of pollution from pesticides and spills from industries; and
- Controlling the risk of invasive vegetation.

Transformation:

- Promoting race and gender representivity;
- Developing an accurate system of metering water consumption, to identify spare water capacity for allocation to emerging farmers; and
- Assisting with the establishment of emerging farmers and/or equity schemes.

Compiled by Danie Bosch
September 2008

